Miniature DVR
AKR-301
User's Manual

※ The contents of the manual can be modified without prior notice to customers

GENERAL SAFETY AND PRECAUTIONS

This AKR-301 is manufactured to meet international safety standards. Review the following safety precautions to avoid injury and prevent damage to the AKR-301 or any products connected to it.

1. Use a correct power source. Do not connect this product to a power source that supplies more than the specified voltage (DC12V), as this will cause damage to the unit.

2. Never insert anything metallic into the AKR-301 as this can cause electric shock.

3. Do not operate in wet & dusty conditions. Keep product surfaces clean and dry. Avoid placing the AKR-301 in areas like a damp basement or a dusty hallway.

4. Do not expose this product to rain or use near water. If the product gets wet, unplug it and contact an authorized dealer immediately.

5. To clean the outside case of the AKR-301, use a lightly dampened cloth (no solvents).

6. Do not operate if you suspected to unit is faulty. If there are any unusual sounds or smells coming from the AKR-301, immediately unplug it and contact an authorized dealer or service centre.

7. Do not attempt to remove the top cover.
Warning: Removing the AKR-301's cover can cause an electrical shock.

8. Handle AKR-301 carefully to avoid damaging the product. Dropping your AKR-301 on any hard surface may cause the unit to malfunction. If the AKR-301 doesn't work properly due to physical damage, contact an authorized dealer for repair or exchange.

9. The unit has a lithium battery preinstalled.

10. The standard lithium cell 3V battery located on the motherboard should be replaced if the time clock does not hold its time after the power is turned off.

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Chapter 1: Packing Contents

▶ **Contents in the package**

AKR-301 Main Unit	Remote Control	AV-OUT Cable
12V Power Supply	Installation CD	Quick Guide
SD Card (Option)	USB SD Reader (Option)	

Chapter 2: Getting To Know Your AKR-301

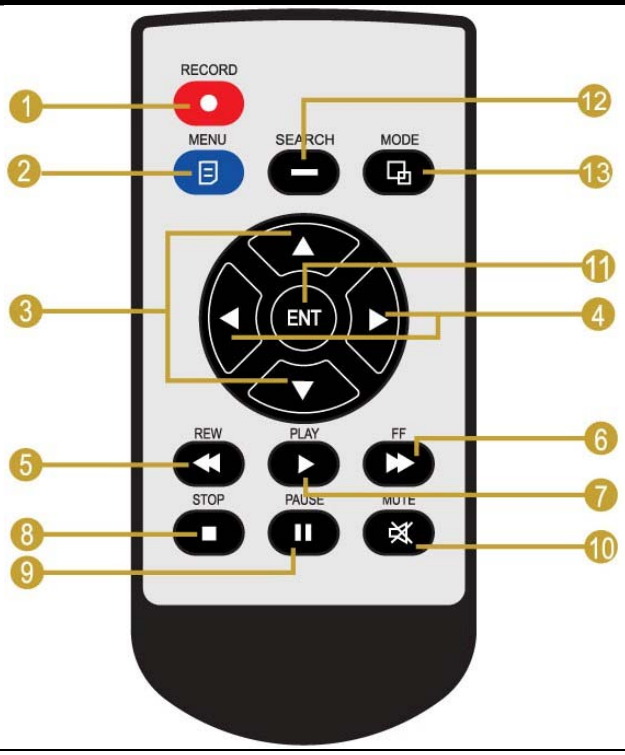
▶ AKR-301

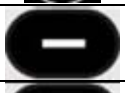
This chapter briefly describes the functions of each connection and LED on AKR-301. For more details on the set-up and operation of AKR-301, refer to Chapter 6, AKR-301 MENU.

1	**Recording LED**
	This light indicates while AKR-301 is recording.
2	**Power LED**
	This light indicates when the AKR-301 is powered up.
3	**AV-OUT**
	Connect AV-OUT monitor cable.
4	**Power**
	Connect 12V power supply.
5	**Focus Handle**
	Adjust focus. (Focus Near / Focus Far)
6	**CCD Lens**
	1/3” Sony New Structure Super HAD Color CCD
7	**Recording Button**

	The button to record video.
8	**Bracket Hole**
	The hole to connect wall mount bracket (Soon Be Available)
9	**SD Memory Slot**
	Insert SD Card into the data storage slot.
10	**Remote Controller Receiver**
	The remote control must be pointing at the AKR-301 and be in line of sight to work.
11	**Reset**
	Pressing the reset button will return the AKR-301 setting to factory default.

Chapter 3: Remote Control



1		REC: Starts AKR-301 recording.
2		MENU: Enters the AKR-301 'MENU' mode.
3		UP/ DOWN buttons to chooses menu fields and changes values.
4		Plays recorded video forward. Plays recorded video backward.
5		REW: Fast Rewind button
6		FF: Fast forward button
7		PLAY: The button to start video playback.
8		STOP: The button to stop playback or recording.
9		PAUSE: The button to pause video playback.
10		MUTE: The button to pause audio.
11		ENT: The button to choose or change a menu option or values in a menu field.
12		SEARCH: The button to find recorded files in SD Memory.
13		MODE: Exit Menu Mode

Chapter 4: Getting Started

OVERVIEW ON SET-UP PROCEDURES

Below is an overview of the installation steps required get your AKR-301 unit working.
Each step is explained in detail in Chapter 5 - Hardware Installation.

(1) Insert a SD MEMORY.
(2) Connect the AKR-301 to a TV set or monitor by using AV-OUT cable.
(3) Connect the power.
(4) Turn the power on.
(5) Start TV Monitoring and recording.

General Operating Advice:

● Make sure that a SD Memory card is inserted.
(See Chapter 5 -Hardware Installation)

● The firmware used in AKR-301 is compatible with your computer's operating system (i.e. Windows). Therefore, you can take the SD memory card from this AKR-301 and install it in your computer to view recorded video. (Refer to the AKR Player manual.)

● AKR-301 offers you the flexibility to choose a recording frame rate (maximum rate: 30 frames per second). The faster frame rate the greater the SD Memory storage capacity required. Reducing the frame rate (minimum rate: 1 frame per 10 seconds) will allow a greater recording duration.

● When first powering up AKR-301, the unit enters the default operational state: "VIEW mode".
In this mode, AKR-301 does not record nor play the recorded stream, but only shows the current images from the camera.

● The default recording values for the AKR-301 are 30 frames per second (25 frames in PAL) with normal video quality. If you use 1GB SD Memory, AKR-301 can record for approximately 2 hours.

● If the power is inappropriately turned off while AKR-301 is in the record mode (i.e. power failure), it will re-enter the record mode automatically when power is re-established.

Refer to Chapter 5 - Hardware Installation for more information on installation procedures.

Chapter 5: Hardware Installation

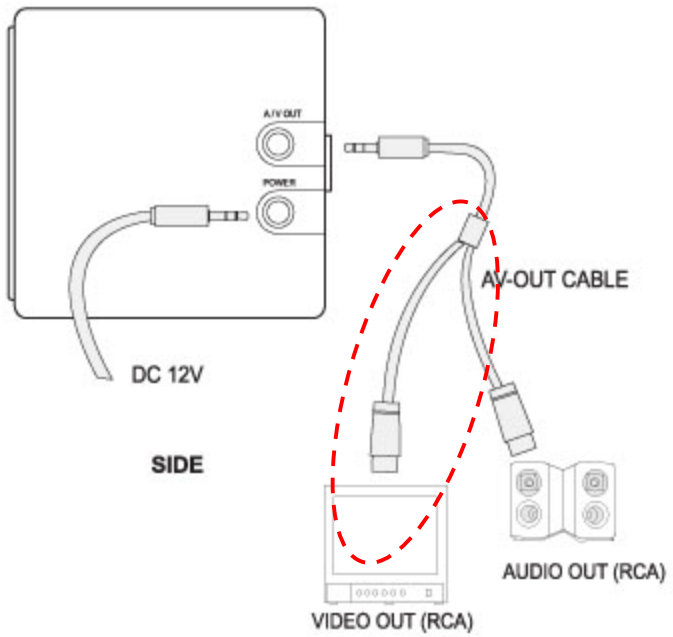
SD MEMORY INSTALLATION

① Format SD Memory	Most SD cards are pre-formatted to FAT32. If not, insert the card into the SD card slot on your PC and format it there. ※ In case there is no card slot on your PC, use and external card reading device.
② Insert SD Memory into SD slot on AKR-301	After formatting, take the SD Memory card from your PC and insert it into SD slot on AKR-301.
③ Backup recorded files in SD Memory	When SD Memory storage is full, the recorded files can be backed up in your PC. Insert SD card in your PC and move the files of SD card into the HDD of our PC. You can also check each recorded file through AKR Player.

※ It is recommended that only SanDisk or Transcend SD cards are used, these are compatible with AKR-301.
※ Be sure to turn off AKR-301 first when you take out SD card from the slot.

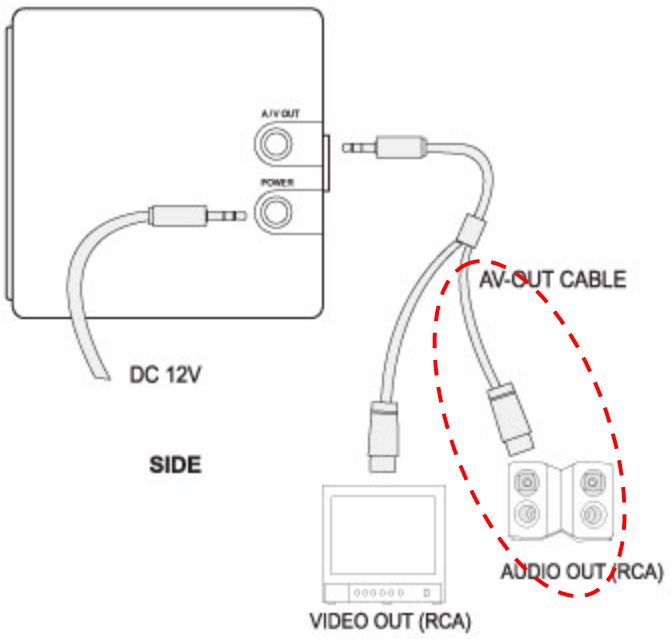
CONNECTING THE AKR-301TO YOUR TV SET OR MONITOR

① Video Output Connection (For TV / monitor screen display)



To display images from the AKR-301, connect the video output signal to your monitor or Television. Any Television with a VIDEO INPUT terminal is suitable for displaying the images. The diagram above shows the video signal connections.

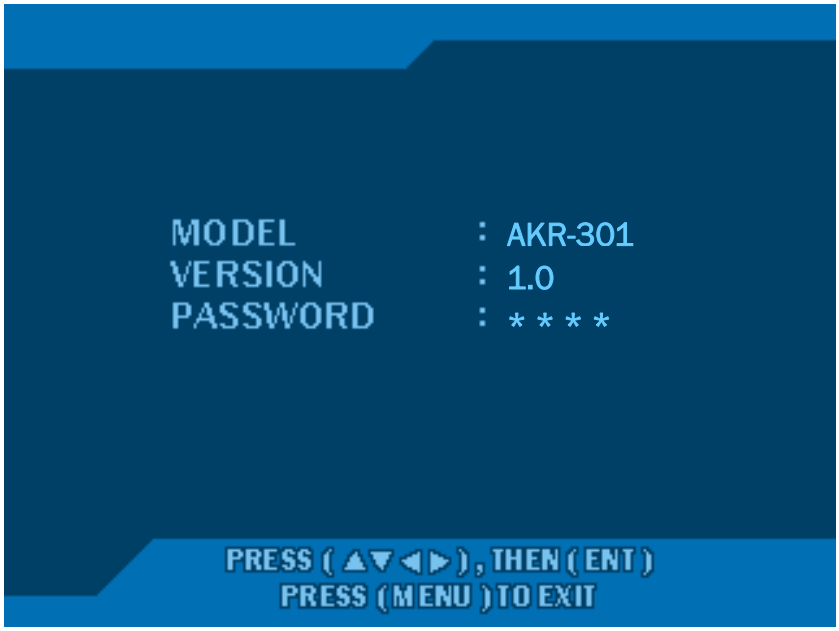
② Audio Output Connection (For TV / monitor speaker)



Using RCA cable, connect the AUDIO-OUT terminal of AV-OUT cable to AUDIO-IN terminal on your TV.

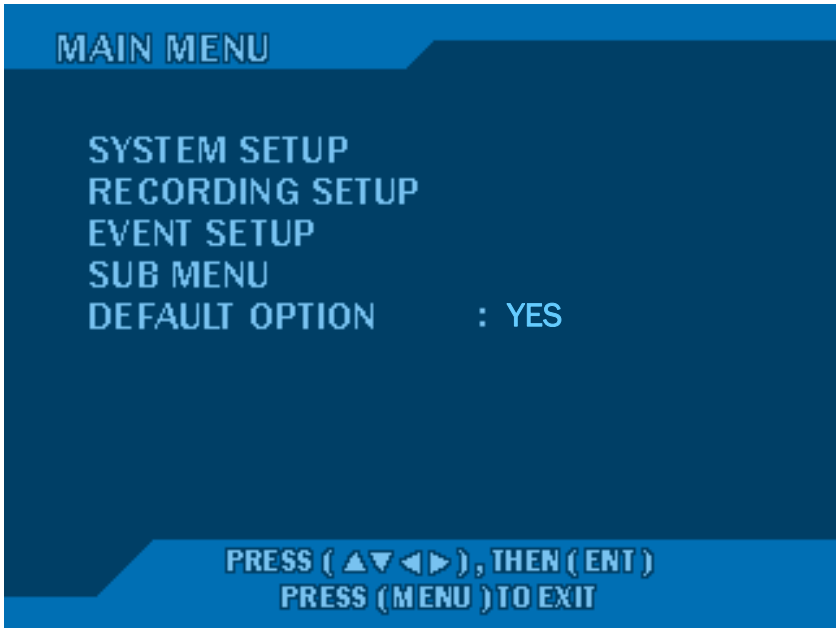
Chapter 6: AKR-301 Menu

1. ACCESS TO OSD MENU



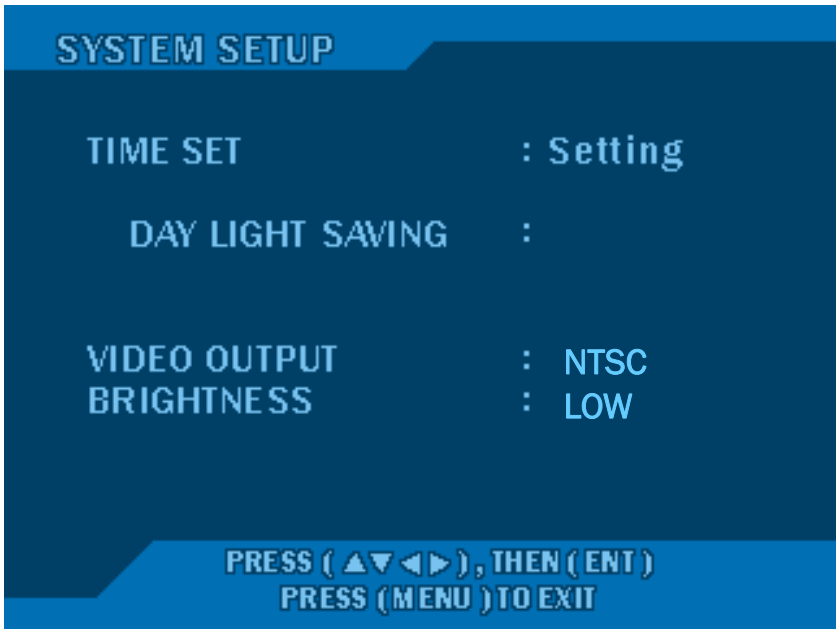
Press 'MENU' button on the remote control to access the AKR-301 OSD menu.
Please refer to 'Chapter 3: Remote control' on how to use remote control buttons.
Default password is '0000'. To change the password; go to '[SUB MENU]→[PASSWORD CHANGE]'.
Use the up/down arrows on the remote control to adjust the numerical settings.

2. MAIN MENU



In the main menu, the 'indicator '■' will be shown on the left of each menu.
Press the 'UP/DOWN' button on remote control to select the desired menu. After placing '■' on the desired menu, press 'ENTER' to access the sub-menu.

3. SYSTEM SETUP



Configure current time and 'day light saving' option. On setting the current time, the field order should be as follows;
2004/02/17 = year/month/day 19:44:32 = hour/minute/second

3.1 DAY LIGHT SAVING
SELECT 'ON" when you want to use day light saving time. You can set up a time of period when day light saving is applied.

3.2 VIDEO OUTPUT
Not selectable. Display NTSC or PAL according to unit's CCD type.

3.3 BRIGHTNESS:
Select brightness value among low, medium and high.

4. RECORDING SETUP

RECORDING SETUP
VIDEO QUALTITY : HIGH
FRAME RATE : 15
PRE-RECORDING :
POST-RECORDING TIME : HIGH
AUDIO RECORDING : YES
DISK OVERWRITE : NO
DISK FULL WARNING :
REMAINING TIME : 30 MIN
PRESS (▲▼◀▶), THEN (ENT)
PRESS (MENU) TO EXIT

4.1 VIDEO QUALITY

LEVEL (HIGH / NORMAL / LOW): Select desired video level from 'LOW' to 'HIGH'.
Compression Bit rate for HIGH: 1.2Mbps
Compression Bit rate for Normal: 750Kbps
Compression Bit rate for Low: 500Kbps

4.2 FRAME RATE

NTSC: Selectable among 0.1 / 0.2 / 0.5 / 1 / 3 / 6 / 15 / 30
PAL: Selectable among 0.1 / 0.2 / 0.5 / 1 / 5 / 6 / 8 / 12.5 / 25

4.3 PRE RECORDING TIME

High: up to 5 seconds for pre-recording available
Normal: 750Kbps / up to 8 seconds for pre-recording available
Low: 500Kbps / up to 10 seconds for pre-recording available

4.4 POST RECORDING TIME

Post-recording time means is the recording time between the beginning and end of an event. (1 sec to 30 mins)

4.5 AUDIO RECORDING:

Audio function can be turned OFF or ON in the menu.

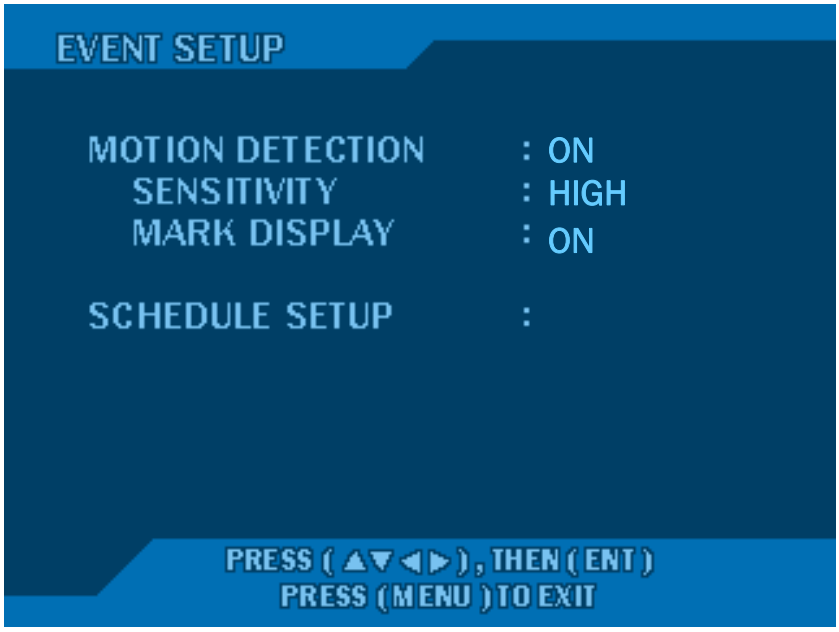
Note: *When recording audio, set the RECORD FRAMERATE to 5 or greater. If you set it under 5, audio recording will not work.*

4.6 DISK OVERWRITE

If overwrite is set to ON, the AKR-301 will continue recording while automatically overwriting the oldest recorded files when SD memory storage capacity is full. Set to OFF, the recording will stop when the SD Memory is full.

4.6.1. DISK FULL WARNING: Select 'YES' if you want to display 'DISK FULL WARNING' when the SD card is full.
4.6.2. REMAINING TIME: This shows remaining time for further recording.

5. EVENT SETUP



5.1 MOTION DETECTION

5.1.1 MOTION (ON / OFF): Select 'ON" if you want to use motion detection.

5.1.2 SENSITIVIITY (LOW / NORMAL / HIGH): You can select the degree of sensitivity of motion detection. Set to HIGH for greater sensitivity to small movements.

5.1.3. MARK DISPLAY (ON / OFF): Select 'ON' if you want "Motion" to display on the monitor.

5.2 SCHEDULE SETUP

Schedule the recording time on this menu. Up to 4 schedules can be set. Configure period of time when recording is available.

6. SEARCH LIST

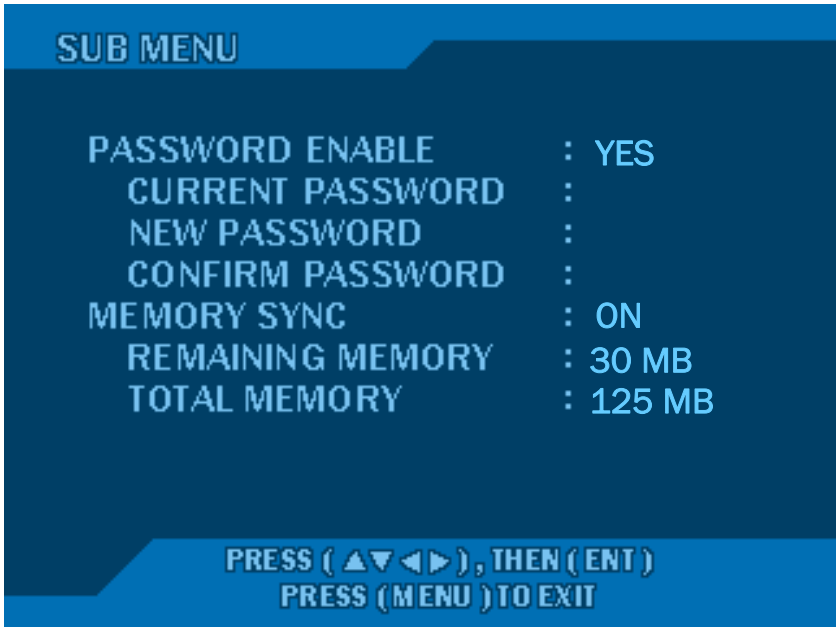
After entering searching option in the fields, clicking 'SEARCH' will list the search results.

6.1 SEARCH FACTOR:
There are three ways to search recorded files; TIME, EVENT, BOTH (TIME & EVENT)

6.1.1 SEARCH MODE – TIME:
Enter the time period you wish to search for.

6.1.2 SEARCH MODE – EVENT:
When you select 'EVENT (or BOTH) on SEARCH MODE', additional search conditions opens; ALARM / EMERG (Emergency) / MOTION

7. SUB MENU


SUB MENU
PASSWORD ENABLE : YES
CURRENT PASSWORD :
NEW PASSWORD :
CONFIRM PASSWORD :
MEMORY SYNC : ON
REMAINING MEMORY : 30 MB
TOTAL MEMORY : 125 MB
PRESS (▲▼◀▶), THEN (ENT)
PRESS (MENU) TO EXIT

To change a password, navigate to PASSWORD CHANGE in the SUB MENU and press the select button [ENT]. The following screen will appear:

7.1 PASSWORD CHANGE:

The Factory Default Password is 0000. To enter this number, press the UP/DOWN button on the remote controller. Once you input the your current password, set a new six digit password using the numbered buttons UP,REW,DOWN,FF on the remote controller. Then, confirm your new password by entering the number again.

7.2 MEMORY SYNC:

The index file is automatically generated and stored in the SD card when inserted into AKR-301. If the index file does not match the files actually stored in the SD card, users can synchronize the index file list and the actual file list. While synchronizing, the process percentage is displayed and then its value goes back to 'NO' when completed.

APPENDIX

SPECIFICATION

ITEM	DESCRIPTION
CCD Module	
Image Device	1/3" Sony New Structure Super HAD Color CCD
Effective Pixels(HxV)	510x492(NTSC), 500x582(PAL)
Sensitivity	0.9Lux
Video Out	VBS 1Vpp ±10%, 75ohm
Field of View(deg)	90(D)
Video	
Compression format	MPEG4(500K-1200Kbps)
Frame Rate	30fps(NTSC), 25fps(PAL)
Video In	CCD Image Sensor
Video Out	1CH Analog Composite, 1Vp-p, 75 Ohms
AUDIO	
Compression	G.711, 8bit PCM
Bit Rate	64Kbps
Sampling Frequency	8 KHz
Input	1 CH Mono, Microphone Input
Output	1 CH Mono, Line Out
	Maximum Out Range : 1100mVp-p
Gain	9.7dB
STORAGE	
Media	SD Memory, Standard SD
Capacity	Max. 4GB
I/O CONNECTOR	
DC Input	12VDC, DC Jack
Video Output	1ch, 75Ohm, 3.5Φ, AV Phone Jack
Audio Output	1ch, Mono, 3.5Φ, AV Phone Jack
SD Memory Interface	1ch, SD Memory Card Slot
REMOTE CONTROLL	
IR Receiver Module	3.0V
Remote Controller	15Key
Receive Range	±30°, 6m
LED DISPLAY	
Power	Red, 3V Power on, Light in power on
Record	Green, Light in Recording
SWITCH	
Reset	Tactile Switch, 1Key
POWER	
Input Voltage	DC12V
Input Voltage Range	9V ~ 14.5V(Restricted in CCD Module)
Power Consumption	AT DC12V, 250mA
Power Supply	DC12V, 500mA, External power supply
DC Jack	ID:1.35Φ, OD:3.5Φ

OPERATING CONDITIONS	
Operating Temperature	-10~50℃(Restricted in CCD Module)
Humidity	20~80% RHG

ENCODING CONDITIONS

Based on 1GB of storage with the installation of 1 camera.

RECORDING TIME TABLE

Video Signal	Record Mode	Video Quality	30 fps	15 fps	7 fps	1 fps
NTSC*	**1ch**	HIGH	2 Hours	4 Hours	8 Hours	16 Hours
		NORMAL	2 .1/2Hours	5 Hours	10 Hours	20 Hours
		LOW	3 Hours	6 Hours	12 Hours	24 Hours

** The NTSC signal mode is used for most of televisions produced in the U.S.*

FRAME SIZE (ROUGH DATA SIZE)

Quality	High	Normal	Low
Size	1200Kbps	700 Kbps	500 Kbps

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